

IN THE CLAIMS

1. (Currently Amended) A method for ordering data transferred over multiple channels, comprising:

generating a data packet in response to a first flow control credit;

generating a first sequence number;

inserting the first sequence number into the data packet;

selecting one of a plurality of channels to transfer the data packet;

transferring the data packet over the selected one of the plurality of channels;

transferring a subsequent data packet generated in response to a second flow control credit over a different one of the plurality of channels, the subsequent data packet including a second sequence number.

2. (Original) The method of Claim 1, further comprising:  
incrementing the sequence number in response to transfer of the data packet.

3. (Original) The method of Claim 1, further comprising:  
decrementing a number of flow control credits in response to transfer of the data packet.

4. (Original) The method of Claim 3, further comprising:  
receiving a reply, the reply including a flow control credit;

incrementing a number of flow control credits in response to receipt of the reply.

5. (Original) The method of Claim 1, further comprising:  
resetting the sequence number to an initial value.

6. (Currently Amended) A system for ordering data  
transferred over multiple channels, comprising:

a sequence number unit operable to generate a first  
sequence number;

a request channel controller operable to receive a data  
packet in response to a first flow control credit, the request  
channel controller operable to insert the first sequence  
number into the data packet, the request channel controller  
operable to select one of a plurality of request channels, the  
request channel controller operable to transfer the data  
packet over the selected one of the plurality of request  
channels, the request channel controller operable to receive a  
subsequent data packet in response to a second flow control  
credit, the request channel controller operable to insert a  
second sequence number into the subsequent data packet, the  
request channel controller operable to select a different one  
of the plurality of request channels, the request channel  
controller operable to transfer the subsequent data packet  
over the different one of the plurality of request channels.

7. (Original) The system of Claim 6, wherein the request  
channel controller is operable to generate an increment  
signal, the sequence number unit operable to advance the  
sequence number in response to the increment signal.

8. (Original) The system of Claim 6, further comprising:  
a credit counter unit operable to maintain a number of  
flow control credits.

9. (Original) The system of Claim 8, wherein the request channel controller is operable to generate a decrement signal, the credit counter unit operable to reduce the number of flow control credits in response to the decrement signal.

10. (Original) The system of Claim 8, wherein the credit counter unit is operable to increment the number of flow control credits in response to receipt of a reply including a flow control credit.

11. (Currently Amended) A method for ordering data transferred over multiple channels, comprising:

receiving a plurality of data packets over different ones of a plurality of channels, each data packet including a sequence number, the plurality of packets being received in a non-sequential order;

storing each of the plurality of data packets in a buffer according to its sequence number;

reading the plurality of data packets in sequential order from the buffer according to the sequence numbers;

generating a flow control credit in response to each of the plurality of data packets being read from the buffer.

12. (Original) The method of Claim 11, further comprising:

setting a valid bit in response to a data packet being stored in a portion of the buffer associated with the valid bit.

13. (Original) The method of Claim 12, further comprising:

reading a data packet from the buffer in response to the valid bit;

clearing the valid bit in response to a data packet being read from the associated portion of the buffer.

14. (Original) The method of Claim 11, wherein the sequence number is used to directly index into the buffer.

15. (Currently Amended) A system for ordering data transferred over multiple channels, comprising:

a write port controller operable to receive a plurality of data packets in a non-sequential order over different ones of a plurality of channels, each data packet including a sequence number;

a re-order buffer operable to store the plurality of data packets, the write port controller operable to place each data packet into the re-order buffer in response to its sequence number;

a valid bit unit operable to generate a valid bit for each portion of the re-order buffer, the valid bit unit operable to set a valid bit for a corresponding portion of the re-order buffer in response to a data packet being stored therein;

a read port controller operable to provide data packets in a sequential order in response to a valid bit being set.

16. (Original) The system of Claim 15, wherein the read port controller is operable to generate a flow control credit in response to providing a data packet from the re-order buffer.

17. (Original) The system of Claim 15, wherein the read port controller is operable to clear the valid bit upon providing a data packet from the re-order buffer.

18. (Original) The system of Claim 15, wherein the write port controller uses the sequence numbers to directly index the re-order buffer.